

Response Under 37 C.F.R. §1.111
Serial No.: 10/820,438
Response dated: March 10, 2006
In reply to the Office action mailed: November 10, 2005

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Amendments to the Specification

Please replace paragraph [0037] with the following amended paragraph.

The plunger tip 210 includes a groove 214 in the distal end thereof that is adapted to ~~contacts~~ contact the ISOFIX bar 206. That is, the groove 214 allows the plunger tip 210 to be biased toward the ISOFIX bar 206 past mere tangential contact therewith. This allows some extra travel in the plunger tip 210 when a clip 201 is applied to the ISOFIX bar 206. This is important to allow detection of a relatively thin clip 201, or even a strap (not shown) to provide a robust and reliable switch function, for example between the magnet and the hall with all manufacturing tolerances.

Please replace paragraph [0041] with the following amended paragraph.

An exploded view of an exemplary sensor 500 consistent with the present invention is illustrated in FIG. 5. In the illustrated embodiment, the sensor 500 generally includes a main plate 502 and a travel plate 504. The main plate 502 includes a cutout 506 sized to receive an end portion of the travel plate 504. A leaf spring assembly 508 including two leaf springs 510, 512 arranged to receive orthogonal loading. The leaf spring assembly 508 may be received in the rear of the cutout 506, behind the travel plate 504. The two leaf springs 510, 512 act on a rear edge 514 and a perpendicular face 516. A preload spring 518 is received in the ~~cutout 508~~ cutout 506 between the leaf spring assembly 508 and the main plate 502. Additionally, the travel plate 504 includes a pivot point 519 that may allow for out of axis movement of the travel plate 504.

Please replace paragraph [0044] with the following amended paragraph.

Consistent with the exemplary sensor 500, the magnetic circuit may be combined with separate spring loading in line with both orthogonal axes of movement. The four magnets 602a, 602b, 604a, 604b and two isolator plates 610a, 610b are mounted on the travel plate 502 move together. Any off axis movement will be provided by the pivot point ~~519~~ within 519 within the

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sensor housing at some minimum distance from the hall sensors. Since the sensing movement is limited, in an exemplary embodiment the movement may be in the range of about 0.040 inches, any pivoting motion of the travel plate 504 will not add any significant error to the output since the angle of movement is small and the cosine of the actual movement changes little.

Please replace paragraph [0046] with the following amended paragraph.

FIG. 8 is a perspective view of an exemplary sensor configuration consistent with the invention mounted to a fixed vehicle structure 802. As shown, the sensor assembly 800 includes a connection bar 804 which extends outward from a sensor body 806. The connection bar 804 may extend at an angle of approximately 30 degrees relative to the sensor bar. Of course, those skilled in the art will recognize that the angular orientation of the bar to the body may vary depending upon the application. The body may be secured to the ~~fixed seat assembly 802~~ fixed vehicle structure 802, e.g., seat assembly, via fasteners 808 extending through mounting wings 810 of the sensor body 806.

Please replace paragraph [0051] with the following amended paragraph.

FIG. 11 is a bottom perspective view of a sensor assembly 800 as shown in FIG. 8 affixed to a fixed vehicle ~~seat assembly~~ structure 802. In the illustrated exemplary embodiment, the sensor assembly 800 is affixed to a bracket 1100 having a tapered angular configuration. The bracket 1100 is directly affixed to the ~~assembly~~ fixed vehicle structure 802 via fasteners 1102 and the assembly 800 is affixed to the bracket via fasteners 808. To assemble the sensor assembly 800 to the fixed vehicle structure 802, the bracket may first be installed by fixing the bracket against the ~~assembly~~ fixed vehicle structure 802 and securing the bracket to the ~~assembly~~ fixed vehicle structure 802 via fasteners 1102. The sensor assembly may then be installed to the bracket via fasteners 808.

Please replace paragraph [0052] with the following amended paragraph.

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Turning now to FIG. 12, there is illustrated a perspective view of another exemplary embodiment of a sensor configuration 1200 consistent with the invention. The embodiment 1200 includes a connection bar 1204 and a body portion 1206 which may be mounted to a ~~seat structure, e.g. fixed vehicle structure~~ 802, e.g., a seat structure, via fasteners through wings 1210 extending from the body portion. FIG. 13 is an exploded view of the embodiment 1200 illustrated in FIG. 12. The embodiment 1200 includes the bar 1204, magnets 1206, 1208 and a magnet holder 1210. The magnets may be assembled into openings formed in the magnet holder 1210. The magnets 1206, 1208 may be received in openings, e.g. 1212, in the magnet holder and the magnet holder may be affixed to the bar. As shown, the bar may include end portions that extend through associated openings 1214, 1216 in the magnet holder 1210.

Please replace paragraph [0057] with the following amended paragraph.

This configuration also provides small output voltage variance within large manufacturing tolerances. ~~For example, FIG. 8 is a plot 800~~ For example, FIG. 19 is a plot 1900 of magnetic flux versus distance of travel of the magnets M1, M2 relative to the Hall device H. In the illustrated exemplary embodiment, a gradient of about 1500 Gauss is associated with movement of about 3 millimeters of the magnets M1, M2 relative to the Hall device H.

Please replace paragraph [0062] with the following amended paragraph.

FIG. 23 is a plot 2300 of Gauss versus sensor movement for a digital IC. In the illustrative plot, the sensor assembly may be configured to provide a first output when the force on the bar is between 0 and 20 N, as indicated by ~~state one zone~~ state 1 zone in FIG. 23. A second output may be provided when the force on the bar exceeds for example 60 N, indicated by state 2 zone in FIG. 23